

CUSTOMER NO.: 24498  
Serial No.: 10/560,477

PATENT  
PU030170

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicant: Jill MacDonald Boyce

Examiner: Thompson, J.

Serial No: 10/560,477

Group Art Unit: 2625

Filed: December 12, 2005

Docket: PU030170

For: ENCODING METHOD AND APPARATUS ENABLING FAST CHANNEL CHANGE  
OF COMPRESSED VIDEO

Mail Stop Appeal Brief-Patents  
Hon. Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**APPEAL BRIEF**

Applicant appeals the status of Claims 1-15 as presented in response to a non-final Office Action dated September 21, 2010 and rejected in a final Office Action dated November 18, 2010, pursuant to the Notice of Appeal filed concurrently herewith and submit this appeal brief.

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**1. Real Party in Interest**

The real party in interest is THOMSON LICENSING, the assignee of the entire right title and interest in and to the subject application by virtue of an assignment recorded with the Patent Office on December 21, 2005 at reel/frame 017326/0550.

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2. Related Appeals and Interferences

None

**3. Status of Claims**

Claims 1-15 are pending, stand rejected, and are under appeal. A copy of the Claims 1-15 is presented in Section 8 below.

**4.     Status of Amendments**

A Preliminary Amendment under 37 CFR §1.115, mailed to the PTO on December 12, 2005, was entered. An amendment under 37 CFR §1.111, mailed to the PTO on November 2, 2010 in response to a non-final Office Action dated September 21, 2010, was entered. No Responses/Amendments were filed subsequent to the above Amendment on November 2, 2010. A final Office Action dated November 18, 2010, to which this Appeal Brief is directed, is currently pending.

**5. Summary of Claimed Subject Matter**

Independent Claim 1 is directed to “[a] video encoder for receiving input pictures and providing compressed stream data” (Claim 1, preamble).

The subject matter of the first element (beginning with “a normal encoding portion”) recited in Claim 1 is described, e.g., at: page 7, line 31 to page 8, line 1, and page 8, lines 15-18. Moreover, the subject matter of the first element of Claim 1 involves, e.g.: element 130 of FIG. 1.

The subject matter of the second element (beginning with “a lower-quality encoding portion”) recited in Claim 1 is described, e.g., at: page 7, line 31 to page 8, line 1, and page 8, lines 15-18. Moreover, the subject matter of the second element of Claim 1 involves, e.g.: element 140 of FIG. 1.

The subject matter of the third element (beginning with “a multiplexor”) recited in Claim 1 is described, e.g., at: page 8, lines 1-4 and lines 21-22. Moreover, the subject matter of the third element of Claim 1 involves, e.g.: element 150 of FIG. 1.

Independent Claim 10 is directed to “[a] video encoding method for receiving input pictures and providing compressed stream data” (Claim 10, preamble).

The subject matter of the first element (beginning with “receiving”) recited in Claim 10 is described, e.g., at: page 12, lines 27-28. Moreover, the subject matter of the first element of Claim 10 involves, e.g.: elements 812 of FIG. 8.

The subject matter of the second element (beginning with “encoding normal stream data”) recited in Claim 10 is described, e.g., at: page 12, lines 28-29. Moreover, the subject matter of the second element of Claim 10 involves, e.g.: element 814 of FIG. 8.



The subject matter of the third element (beginning with “encoding channel change stream data”) recited in Claim 10 is described, e.g., at: page 12, lines 30-33. Moreover, the subject matter of the third element of Claim 10 involves, e.g.: element 816 of FIG. 8.

The subject matter of the fourth element (beginning with “multiplexing”) recited in Claim 10 is described, e.g., at: page 12, line 33 to page 13, line 2. Moreover, the subject matter of the fourth element of Claim 10 involves, e.g.: element 818 of FIG. 8.

Independent Claim 13 is directed to “[a] video encoding apparatus for receiving input pictures and providing compressed stream data” (Claim 13, preamble).

The subject matter of the first element (beginning with “means for receiving”) recited in Claim 13 is described, e.g., at: page 7, line 31 to page 8, line 1. Moreover, the subject matter of the first element of Claim 13 involves, e.g.: element 100 (e.g., 130, 140) of FIG. 1.

The subject matter of the second element (beginning with “means for encoding normal stream data”) recited in Claim 13 is described, e.g., at: page 7, line 31 to page 8, line 1, and page 8, lines 15-18. Moreover, the subject matter of the second element of Claim 13 involves, e.g.: element 130 of FIG. 1.

The subject matter of the third element (beginning with “means for encoding channel change stream data”) recited in Claim 13 is described, e.g., at: page 7, line 31 to page 8, line 1, and page 8, lines 15-18. Moreover, the subject matter of the third element of Claim 13 involves, e.g.: element 140 of FIG. 1.

The subject matter of the fourth element (beginning with “means for combining”) recited in Claim 13 is described, e.g., at: page 8, lines 1-4 and lines 21-22. Moreover, the subject matter of the fourth element of Claim 13 involves, e.g.: element 150 of FIG. 1.

Independent Claim 14 is directed to “[a] non-transitory digital videodisc” (Claim 14, preamble).

The subject matter of the first element (beginning with “a plurality of block transform coefficients”) recited in Claim 14 is described, e.g., at: page 8, lines 15-22 and page 12, line 33 to page 13, line 2. Moreover, the subject matter of the first element of Claim 14 involves, e.g.: element 150 of FIG. 1.

The subject matter of the second element (beginning with “the coefficients indicative of an original signal data sequence”) recited in Claim 14 is described, e.g., at: page 7, line 31 to page 8, line 1, and page 12, lines 28-33. Moreover, the subject matter of the second element of Claim 14 involves, e.g.: elements 130 and 140 of FIG. 1.

The subject matter of the third element (beginning with “the normal stream data”) recited in Claim 14 is described, e.g., at: page 8, lines 15-18 and page 12, lines 28-29. Moreover, the subject matter of the third element of Claim 14 involves, e.g.: element 150 of FIG. 1.

The subject matter of the fourth element (beginning with “and the channel change stream”) recited in Claim 14 is described, e.g., at: page 8, lines 15-18 and page 12, lines 30-33. Moreover, the subject matter of the fourth element of Claim 14 involves, e.g.: element 150 of FIG. 1.

The subject matter of the fifth element (beginning with “the reduced-quality data sequence”) recited in Claim 14 is described, e.g., at: page 4, lines 32-34. Moreover, the subject matter of the fifth element of Claim 14 involves, e.g.: element 150 of FIG. 1.

**6. Grounds of Rejection to be Reviewed on Appeal**

Claims 14 and 15 stand rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter.

Claims 1, 3-5, and 7-15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over European Patent Application No. EP 0 883 299 A2 to Nakagawa et al. (hereinafter also referred to as “Nakagawa” in short) in view of U.S. Patent Publication No. 2004/0034864 to Barrett et al. (hereinafter “Barrett”).

Claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Nakagawa in view of Barrett and U.S. Patent No. 6,587,505 to Nozawa et al. (hereinafter “Nozawa”).

Claims 6, 14, and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Nakagawa in view of Barrett and well-known prior art.

The preceding rejections are presented for review in this Appeal.

7. Argument

A. **Introduction**

In general, the present invention is directed to an encoding method and apparatus enabling fast channel change of compressed video (Applicant's Specification, Title). As disclosed in the Applicant's specification, the present invention is directed to the problem of channel change delay. For example, as noted at page 1, lines 24-26 of the Applicant's specification: "[w]hen a receiver initially begins receiving a program on a particular channel, such as following a channel change or initial turning on of the receiver, it must wait until an I picture is received to begin decoding properly, which causes a delay."

In contrast to the prior art, "the invention enables low delay channel change time in a compressed video broadcast system, while significantly reducing the bitrate over prior methods of enabling low-delay channel change" (Applications' specification, p. 4, lines 17-20).

The claims of the pending invention include novel features not shown in the cited references and that have already been pointed out to the Examiner. These features provide advantages over the prior art and dispense with prior art problems such as undue channel change delay (Applicant's specification, p. 4, lines 16-20).

It is respectfully asserted that Claims 1, 10, 13, and 14 are each patentably distinct and non-obvious over the cited references in their own right. For example, the below-identified limitations of Claims 1, 10, 13, and 14 are not shown in the cited reference. Moreover, these Claims are distinct from each other in that they are directed to different implementations and/or include different limitations. For example, Claim 1 is directed to a video encoder, Claim 10 is directed to a video encoding method, Claim 13 is directed to a video encoding apparatus, and

Claim 14 is directed to a non-transitory digital videodisc (Claims 1, 10, 13, and 14, preambles). Accordingly, each of Claims 1, 10, 13, and 14 represent separate features/implementations of the invention that are separately novel and non-obvious with respect to the prior art and to the other claims. As such, Claims 1, 10, 13, and 14 are separately patentable and are each presented for review in this appeal.

**B. Whether Claims 14 and 15 are Unpatentable Under 35 U.S.C. 101 as Being Directed to Non-statutory Subject Matter**

In *Bilski v. Kappos*, 561 U.S. \_\_\_\_ (2010), the United States Supreme Court stated that the machine-or-transformation test is a “useful and important clue” and “investigative tool” for determining whether some claimed methods are statutory processes. The machine-or-transformation test is a two-branched inquiry. According to the machine or transformation test, a process may be deemed statutory under 35 U.S.C. 101 if the process is (1) tied to another statutory category, or (2) transforms underlying subject matter to a different state or thing (*Id.* at 1396).

Certain considerations are applicable to analysis under either branch (*Id.* at 1396). First, the use of a specific machine or transformation of an article must impose meaningful limits on the claim's scope to impart patent-eligibility (*Id.* at 1396). Second, the involvement of the machine or transformation in the claimed process must not merely be insignificant extra-solution activity (*Id.* at 1396).

It will be shown herein below that the limitations of Claims 14 and 15 reproduced herein represent statutory subject matter that is in compliance with the requirements of 35 U.S.C. 101, and that such claims should be allowed.

**B1. Claims 14 and 15**

Initially, it is respectfully noted that Claim 15 directly depends from independent Claim 14. Thus, Claim 15 includes all the limitations of Claim 14.

Claims 14 and 15 recite the following (with the following applicable to Claim 15 by virtue of its respective dependency from Claim 14) (emphasis added): “A non-transitory digital videodisc encoded with signal data comprising a plurality of block transform coefficients for each of normal stream and channel change stream data”.

We further note that as per MPEP 2111.02(I), “[a]ny terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation”.

We also note that as specified in a memo (hereinafter also referred to as the “Kappos” memo”, a copy of which is enclosed herewith following the appendices) dated January 26, 2010 from David J. Kappos, Under Secretary of Commerce for Intellectual Property and Director of the United States Patent and Trademark Office, “[a] claim drawn to such a computer readable medium that covers both transitory and non-transitory embodiments may be amended to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 U.S.C. 101 by adding the limitation ‘non-transitory’ to the claim.” The memo further states that “[s]uch an amendment would typically not raise the issue of new matter, even the specification is silent because the broadest reasonable interpretation relies on the ordinary and customary meaning that includes signals per se.”

Further, regarding the Examiner’s characterization of the data recited in Claim 14 as being non-functional, we respectfully disagree. For example, we note the following from MPEP 2106.01:

Descriptive material can be characterized as either 'functional descriptive material' or 'nonfunctional descriptive material.' In this context, 'functional descriptive material' consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of 'data structure' is 'a physical or logical relationship among data elements, designed to support specific data manipulation functions.' The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) 'Nonfunctional descriptive material' includes but is not limited to music, literary works, and a compilation or mere arrangement of data. Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized.

In the case of Claim 14, one of ordinary skill in the art would readily recognize a logical relationship designed to support specific data manipulation functions amongst the plurality of block transform coefficients recited therein. For example, the block transform coefficients, being named as such and particularly in view of the context provided by the overall claim, would be readily recognized as being involved in a block based compression scheme involving transformation and subsequently inverse transformation, where such transformations are clearly data manipulations. As such, the plurality of transform coefficients is clearly functional descriptive material. Accordingly, by being recorded on some computer-readable medium (i.e., the non-transitory digital videodisc recited in Claim 14), such functional descriptive material becomes structurally and

functionally interrelated to the medium and is hence statutory since use of technology permits the function of the descriptive material to be realized.

In view of all the preceding, it is respectfully asserted that Claim 14 does, in fact, satisfy the requirements of 35 U.S.C. 101 for at least the preceding reasons. Since remaining Claim 15 depends from Claim 14, Claim 15 also satisfies 35 U.S.C. 101 for at least the same reasons as set forth above regarding Claim 14. Therefore, reversal of the rejection of Claims 14 and 15 as not representing proper statutory subject matter meeting the requirements of 35 U.S.C. 101 is earnestly requested.

**C. Whether Claims 1, 3-5, and 7-15 are Unpatentable Under 35 U.S.C. §103(a) by EP 0 883 299 A2 to Nakagawa et al. in view of U.S. Patent Publication No. 2004/0034864 to Barrett et al.**

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art” (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claims 1, 3-5, and 7-15 as being unpatentable over by EP 0 883 299 A2 to Nakagawa et al. (hereinafter “Nakagawa” in short) in view of U.S. Patent Publication No. 2004/0034864 to Barrett et al. (hereinafter “Barrett” in short). The Examiner contends that the cited combination shows all the limitations recited in Claims 1, 3-5, and 7-15.



Nakagawa is directed to an “Apparatus and method for coding and decoding video images” (Nakagawa, Title). In further detail, Nakagawa discloses in the abstract, the following:

An apparatus and method for coding and decoding digital video images, capable of maintaining the quality of static regions, such as background images, in decoded pictures even when the resolution of pictures has been changed from high to low. The apparatus is equipped with two storage units, low-resolution and high-resolution picture storage units (4,3), to hold reference pictures in two different picture formats. When processing coded blocks (or blocks having at least one non-zero transform coefficient), a high-resolution picture updating unit (13) converts corresponding blocks of a low-resolution reference picture retrieved from the low-resolution picture storage unit (4) to obtain high-resolution block images. It then updates a high resolution picture stored in the high-resolution picture storage unit (3) with the obtained high-resolution block images. This updating operation is not applied on non-coded blocks. As a result, only active regions corresponding to the coded blocks are updated within the picture stored in the high-resolution picture storage unit (3), while the remaining part, which may possibly be static background images, is preserved without losing their high visual quality.

Barrett is directed to “seamless digital channel changing” (Barrett, Title). In further detail, Barrett discloses in the abstract, the following:

Seamless channel changing in a digital-television-based entertainment network can be implemented, for example, by providing an intra frame to a client device upon a change to a new channel even when the broadcast video data is previously compressed on a macroblock basis. In an exemplary implementation, a

method includes: receiving a stream of broadcast video data that is encoded on a macroblock basis; continuously decoding the stream of broadcast video data into successive decoded images; and transmitting, responsive to a channel change message received from a client device, an intra frame that has been encoded from a decoded image of the successive decoded images. Other exemplary implementations are described herein.

It will be shown that the limitations of Claims 1, 3-5, and 7-15 reproduced herein are not taught or suggested by the cited references (alone or in combination), and that such Claims should be allowed including those dependent there from.

**C1. Claims 1, 3-5, and 7-15**

Initially, it is respectfully noted that Claims 3-5 and 7-9 directly or indirectly depend from independent Claim 1, Claims 11-12 directly depend from independent Claim 10, and Claim 15 directly depends from independent Claim 14. Thus, Claims 3-5 and 7-9 include all the limitations of Claim 1, Claims 11-12 include all the limitations of Claim 10, and Claim 15 includes all the limitations of Claim 14.

It is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 1, 3-5, and 7-9 (with the following applicable to Claims 3-5 and 7-9 by virtue of their respective dependencies from Claim 1):

1. A video encoder for receiving input pictures and providing compressed stream data, the encoder comprising:

- a normal encoding portion for receiving input pictures and providing normal stream data;
- a lower-quality encoding portion for receiving input pictures and providing channel change stream data; and
- a multiplexor in signal communication with each of the normal and lower-quality portions for receiving and combining the normal and channel change data streams.

Moreover, it is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 10-12 (with the following applicable to Claims 11-12 by virtue of their respective dependencies from Claim 10):

10. A video encoding method for receiving input pictures and providing compressed stream data, the method comprising:

- receiving input pictures;
- encoding normal stream data from the received input pictures;
- encoding channel change stream data from the received input pictures

wherein the channel change stream data comprises lower-quality encoded data than the normal stream data; and

- multiplexing the normal and channel change data streams into a combined output stream.

Further, it is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claim 13:

13. A video encoding apparatus for receiving input pictures and providing compressed stream data, the apparatus comprising:

means for receiving input pictures;  
means for encoding normal stream data from the received input pictures;  
means for encoding channel change stream data from the received input pictures, wherein the channel change stream data comprises lower-quality encoded data than the normal stream data; and  
means for combining the normal and channel change data streams into a combined output stream.

Also, it is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 14-15 (with the following applicable to Claim 15 by virtue of its respective dependency from Claim 14):

14. A non-transitory digital videodisc encoded with signal data comprising a plurality of block transform coefficients for a combined stream formed from each of normal stream and channel change stream data, the coefficients indicative of an original signal data sequence, the normal stream data of the digital videodisc having coefficients embodying a normal quality data sequence, and the channel change stream of the digital videodisc having coefficients embodying a reduced-quality data sequence, the reduced-quality data sequence comprising at least one additional intra-coded picture.

Against the preceding reproduced limitations of Claims 1, 10, and 13 relating to a multiplexer (Claim 1) or multiplexing (Claim 10) or means for combining (Claim 13) or combined (Claim 14) with respect to the normal stream and the channel change stream, the Examiner has cited the following portions of Nakagawa with the following reasoning: "column 8, lines 3-11 of

Nakagawa – normal and lower-quality data streams combined according to resolution selection controller, and stored frames are converted accordingly.”

However, the Examiner then admits that “Nakagawa does not disclose expressly that the lower-quality encoding portion provides channel change stream data; and that the multiplexer combines the normal and channel change data streams”.

Referring back to column 8, lines 3-11 of Nakagawa, the same discloses the following in its entirety:

Next, suppose that the resolution selection controller 1 has changed the picture resolution mode to the low resolution mode to encode the next frame. Upon transition in the picture resolution from high to low, the low resolution picture updating unit 14 entirely converts the picture stored in the high-resolution picture storage unit 3 to the low resolution, and feeds the resultant low-resolution picture to the low-resolution picture storage unit 4.

Initially, we note that we respectfully disagree with the Examiner’s reading of Nakagawa. For example, Nakagawa does not combine a high resolution stream and a low resolution stream, let alone combining a normal stream and a channel change stream as essentially recited in each of Claims 1, 3-5, and 7-15, let alone doing the same using a multiplexer or multiplexing as recited in Claims 1, 3-5, and 7-12. For example, the entire disclosure of Nakagawa does not even disclose a “multiplexer” or “multiplexing” as recited in Claims 1, 3-5, and 7-12. Moreover, we note per at least the preambles of each of Claims 1, 3-5, and 7-15, the resultant combined data stream is provided (output) from the corresponding video encoder of Claims 1, 3-5, and 7-9, the video

encoding method of Claims 10-12, the video encoding apparatus of Claim 13, and the digital videodisc of Claims 14-15.

Moreover, we note that the channel change stream data comprises lower-quality encoded data than the normal stream data, as essentially recited in each of Claims 1, 3-5, and 7-15. Thus, while a combination stream is essentially formed in each of Claims 1, 3-5, and 7-15 by virtue of the combining/multiplexing of the normal stream and the channel change stream, Nakagawa is solely concerned with outputting **ONLY ONE OF** a high resolution picture **OR** a low resolution picture, and hence never forms a combination stream in contrast to the multiplexer/means for combining or multiplexing/combining essentially recited in Claims 1, 3-5, and 7-15.

For example, col. 2, line 35 to col. 3, line 1 of Nakagawa disclose the following:

a video coding apparatus for *performing* a predictive *coding of digital video input signals* in conjunction with an internal picture format conversion *according to a picture resolution mode that is determined by a resolution selection controller....* Here, the picture resolution mode can be *EITHER* *a high resolution mode OR a low resolution mode*. This proposed video coding apparatus comprises ... a selective reading-out unit to selectively read out the high-resolution picture *from* the high-resolution picture storage unit *when* the high resolution mode has been selected by the resolution selection controller, *OR* the low-resolution picture *from* the low-resolution picture storage unit *when* the low resolution mode has been selected by the resolution selection controller.

Regarding the preceding reproduced portion of Nakagawa, we note the selective reading-out unit that selectively reads out from **ONE** of the high-resolution picture storage unit **OR** the low-resolution picture storage unit. We note that the selective

reading-out unit shown in FIG. 1 of Nakagawa involves a switch having two inputs and one output, where only one of the inputs can be selected at any given time. We note that one input is connected to the high-resolution picture storage unit, and the other input is connected to the low-resolution picture storage unit. Given such a structure of the selective reading-out unit 14, Nakagawa cannot output both a high-resolution picture and a low-resolution picture at the same time, let alone combine the same for providing a combined output as essentially recited in each of Claims 1, 3-5, and 7-15.

Moreover, column 4, lines 43-45 of Nakagawa disclose that “the picture resolution mode can be *EITHER* a high resolution mode *OR* a low resolution mode” (emphasis added).

Additionally, while the Examiner has refuted our definitions of a multiplexer and/or multiplexing, we note the following from the well-known source “The Electrical Engineering Handbook, Second Edition, Ed. in Chief R. Dorf, CRC Press and IEEE Press, 1997, p. 1747 (emphasis added): “Particularly in missile telemetry, it is important that multiple measurements be transmitted over a single carrier to save power and minimize electronic equipment and antennas. Such simultaneous transmission of signals over a common path, called multiplexing, is sometimes used in industrial telemetry”. Such simultaneous transmission (or simultaneous output) is inherent in a combined signal such as that produced and/or otherwise implicated by the explicit limitations recited in the aforementioned claims. To that end, we note the explicit use of the word “combining” in the aforementioned claims. Nonetheless, all of the preceding

applies to a “multiplexer” and “multiplexing” as also recited in the aforementioned claims, and as would be recognized by one of ordinary skill in the art.

Thus, the cited portion of Nakagawa does not teach or suggest combining two streams, but rather converting a picture stored in a high-resolution picture store to a low resolution and providing that low-resolution picture to a low-resolution picture store. Moreover, even if assuming *arguendo* that any combining where in fact disclosed in Nakagawa, such combining clearly is not performed to provide (output) a combined stream as the apparatus and method of Nakagawa only outputs either a high-resolution picture or a low-resolution picture.

Thus, by limiting its output to either a high-resolution picture or a low-resolution picture, while each of Claims 1, 3-5, and 7-15 involves multiplexing or otherwise combining the normal stream and the channel change stream, the invention of Nakagawa can be considered to actually teach away from the explicit limitations recited in Claims 1, 3-5, and 7-15. However, as set forth in MPEP 2145.X.D.1, “It is improper to combine references where the references teach away from their combination.” *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) (The claimed catalyst which contained both iron and an alkali metal was not suggested by the combination of a reference which taught the interchangeability of antimony and alkali metal with the same beneficial result, combined with a reference expressly excluding antimony from, and adding iron to, a catalyst.).

Hence, Nakagawa does not teach or suggest all the above reproduced limitations of Claims 1, 3-5, and 7-15.

We note that Barrett does not cure the deficiencies of Nakagawa and, similar to Nakagawa actually teaches away from the explicit limitations recited in Claims 1, 3-5, and 7-15. For example,



the Examiner has even admitted at the onset that “Barrett discloses encoding normal stream data and separately encoding channel change stream data (fig. 5 and para. 6 of Barrett)”. Thus, similar to Nakagawa, Barrett does not disclose multiplexing and/or otherwise combining a normal stream with a channel change stream as recited in Claims 1, 3-5, and 7-15.

Thus, none of the cited references, either taken singly or in any combination, teach or suggest all of the above reproduced limitations of Claims 1, 3-5, and 7-15; and therefore the Examiner has not even established a prima facie obviousness rejection. Further, even if we were to assume, arguendo, that a proper prima facie obviousness rejection had been established – the cited references teach away from combining the references and therefore is improper.

Accordingly, Claims 1, 3-5, and 7-15 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above. Therefore, reversal of the rejection of Claims 1, 3-5, and 7-15 is earnestly requested.

**D. Whether Claim 2 is Unpatentable Under 35 U.S.C. §103(a) by EP 0 883 299 A2 to Nakagawa et al. in view of U.S. Patent Publication No. 2004/0034864 to Barrett et al. and U.S. Patent No. 6,587,505 to Nozawa et al.**

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art” (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claim 2 as being unpatentable over by EP 0 883 299 A2 to

Nakagawa et al. (hereinafter “Nakagawa” in short) in view of U.S. Patent Publication No. 2004/0034864 to Barrett et al. (hereinafter “Barrett” in short) and U.S. Patent No. 6,587,505 to Nozawa et al. (hereinafter “Nozawa” in short). The Examiner contends that the cited combination shows all the limitations recited in Claims 1, 3-5, and 7-15.

Nakagawa is directed to an “Apparatus and method for coding and decoding video images” (Nakagawa, Title). In further detail, Nakagawa discloses in the abstract, the following:

An apparatus and method for coding and decoding digital video images, capable of maintaining the quality of static regions, such as background images, in decoded pictures even when the resolution of pictures has been changed from high to low. The apparatus is equipped with two storage units, low-resolution and high-resolution picture storage units (4,3), to hold reference pictures in two different picture formats. When processing coded blocks (or blocks having at least one non-zero transform coefficient), a high-resolution picture updating unit (13) converts corresponding blocks of a low-resolution reference picture retrieved from the low-resolution picture storage unit (4) to obtain high-resolution block images. It then updates a high resolution picture stored in the high-resolution picture storage unit (3) with the obtained high-resolution block images. This updating operation is not applied on non-coded blocks. As a result, only active regions corresponding to the coded blocks are updated within the picture stored in the high-resolution picture storage unit (3), while the remaining part, which may possibly be static background images, is preserved without losing their high visual quality.

Barrett is directed to “seamless digital channel changing” (Barrett, Title). In further detail, Barrett discloses in the abstract, the following:

Seamless channel changing in a digital-television-based entertainment network can be implemented, for example, by providing an intra frame to a client device upon a change to a new channel even when the broadcast video data is previously compressed on a macroblock basis. In an exemplary implementation, a method includes: receiving a stream of broadcast video data that is encoded on a macroblock basis; continuously decoding the stream of broadcast video data into successive decoded images; and transmitting, responsive to a channel change message received from a client device, an intra frame that has been encoded from a decoded image of the successive decoded images. Other exemplary implementations are described herein.

Nozawa is directed to “seamless digital channel changing” (Nozawa, Title). In further detail, Nozawa discloses in the abstract, the following:

There are provided an image processing apparatus and its method, in which a first image signal and a second image signal whose resolution is higher than that of the first image signal is selectively inputted, a low frequency component and a high frequency component are separated from the second image signal, the first image signal or an image signal of the separated low frequency component is encoded, and an image signal of the separated high frequency component is encoded.

It will be shown that the limitations of Claim 2 reproduced herein are not taught or suggested by the cited references (alone or in combination), and that such Claim should be allowed including those dependent there from.

**D1. Claim 2**

Initially, it is respectfully noted that Claim 2 directly depends from independent Claim 1. Thus, Claim 2 includes all the limitations of Claim 1.

It is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claim 2 (with the following applicable to Claim 2 by virtue of its respective dependency from Claim 1):

1. A video encoder for receiving input pictures and providing compressed stream data, the encoder comprising:
  - a normal encoding portion for receiving input pictures and providing normal stream data;
  - a lower-quality encoding portion for receiving input pictures and providing channel change stream data; and
  - a multiplexer in signal communication with each of the normal and lower-quality portions for receiving and combining the normal and channel change data streams.

Against the preceding reproduced limitations of Claim 2 relating to a multiplexer with respect to the normal stream and the channel change stream, the Examiner has cited the following portions of Nakagawa with the following reasoning: “column 8, lines 3-11 of Nakagawa – normal and lower-quality data streams combined according to resolution selection controller, and stored frames are converted accordingly.”

However, the Examiner then admits that “Nakagawa does not disclose expressly that the lower-quality encoding portion provides channel change stream data; and that the multiplexer combines the normal and channel change data streams”.

Referring back to column 8, lines 3-11 of Nakagawa, the same discloses the following in its entirety:

Next, suppose that the resolution selection controller 1 has changed the picture resolution mode to the low resolution mode to encode the next frame. Upon transition in the picture resolution from high to low, the low resolution picture updating unit 14 entirely converts the picture stored in the high-resolution picture storage unit 3 to the low resolution, and feeds the resultant low-resolution picture to the low-resolution picture storage unit 4.

Initially, we note that we respectfully disagree with the Examiner’s reading of Nakagawa. For example, Nakagawa does not combine a high resolution stream and a low resolution stream, let alone combining a normal stream and a channel change stream as essentially recited in Claim 2, let alone doing the same using a multiplexer as recited in Claim 2. For example, the entire disclosure of Nakagawa does not even disclose a “multiplexer” as recited in Claim 2. Moreover, we note per at least the preamble of Claim 2, the resultant combined data stream is provided (output) from the corresponding video encoder of Claim 2.

Moreover, we note that the channel change stream data comprises lower-quality encoded data than the normal stream data, as essentially recited in Claim 2. Thus, while a combination stream is essentially formed in Claim 2 by virtue of the combining/multiplexing of the normal stream and the channel change stream, Nakagawa is solely concerned with outputting ONLY ONE

OF a high resolution picture OR a low resolution picture, and hence never forms a combination stream in contrast to the multiplexer for combining essentially recited in Claim 2.

For example, col. 2, line 35 to col. 3, line 1 of Nakagawa disclose the following:

a video coding apparatus for *performing* a predictive *coding of digital video input signals* in conjunction with an internal picture format conversion *according to a picture resolution mode that is determined by a resolution selection controller....* Here, the picture resolution mode can be *EITHER a high resolution mode OR a low resolution mode.* This proposed video coding apparatus comprises ... a selective reading-out unit to selectively read out the high-resolution picture *from* the high-resolution picture storage unit *when* the high resolution mode has been selected by the resolution selection controller, *OR* the low-resolution picture *from* the low-resolution picture storage unit *when* the low resolution mode has been selected by the resolution selection controller.

Regarding the preceding reproduced portion of Nakagawa, we note the selective reading-out unit that selectively reads out from ONE of the high-resolution picture storage unit OR the low-resolution picture storage unit. We note that the selective reading-out unit shown in FIG. 1 of Nakagawa involves a switch having two inputs and one output, where only one of the inputs can be selected at any given time. We note that one input is connected to the high-resolution picture storage unit, and the other input is connected to the low-resolution picture storage unit. Given such a structure of the selective reading-out unit 14, Nakagawa cannot output both a high-resolution picture and a low-resolution picture at the same time, let alone combine the same for providing a combined output as essentially recited in Claim 2.

Moreover, column 4, lines 43-45 of Nakagawa disclose that “the picture resolution mode can be *EITHER* a high resolution mode *OR* a low resolution mode” (emphasis added).

Additionally, while the Examiner has refuted our definitions of a multiplexer and/or multiplexing, we note the following from the well-known source “The Electrical Engineering Handbook, Second Edition, Ed. in Chief R. Dorf, CRC Press and IEEE Press, 1997, p. 1747 (emphasis added): “Particularly in missile telemetry, it is important that multiple measurements be transmitted over a single carrier to save power and minimize electronic equipment and antennas. Such simultaneous transmission of signals over a common path, called multiplexing, is sometimes used in industrial telemetry”. Such simultaneous transmission (or simultaneous output) is inherent in a combined signal such as that produced and/or otherwise implicated by the explicit limitations recited in the aforementioned claims. To that end, we note the explicit use of the word “combining” in the aforementioned claims. Nonetheless, all of the preceding applies to a “multiplexer” and “multiplexing” as also recited in the aforementioned claims, and as would be recognized by one of ordinary skill in the art.

Thus, the cited portion of Nakagawa does not teach or suggest combining two streams, but rather converting a picture stored in a high-resolution picture store to a low resolution and providing that low-resolution picture to a low-resolution picture store. Moreover, even if assuming arguendo that any combining where in fact disclosed in Nakagawa, such combining clearly is not performed to provide (output) a combined stream as the apparatus and method of Nakagawa only outputs either a high-resolution picture or a low-resolution picture.

Thus, by limiting its output to either a high-resolution picture or a low-resolution picture, while Claim 2 involves multiplexing or otherwise combining the normal stream and the channel change stream, the invention of Nakagawa can be considered to actually teach away from the explicit limitations recited in Claim 2. However, as set forth in MPEP 2145.X.D.1, “It is improper to combine references where the references teach away from their combination.” *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) (The claimed catalyst which contained both iron and an alkali metal was not suggested by the combination of a reference which taught the interchangeability of antimony and alkali metal with the same beneficial result, combined with a reference expressly excluding antimony from, and adding iron to, a catalyst.).

Hence, Nakagawa does not teach or suggest all the above reproduced limitations of Claim 2.

We note that Barrett does not cure the deficiencies of Nakagawa and, similar to Nakagawa actually teaches away from the explicit limitations recited in Claim 2. For example, the **Examiner has even admitted** at the onset that “Barrett discloses **encoding** normal stream data and **separately encoding** channel change stream data (fig. 5 and para. 6 of Barrett)”.

Moreover, we note that Nozawa also does not cure the deficiencies of Nakagawa and/or Barrett, and is silent regarding the above reproduced limitations of Claim 2. Thus, similar to Nakagawa and Barrett, Nozawa does not disclose multiplexing and/or otherwise combining a normal stream with a channel change stream as recited in Claim 2.

Thus, none of the cited references, either taken singly or in any combination, teach or suggest all of the above reproduced limitations of Claim 2; and therefore the Examiner has not even established a prima facie obviousness rejection. Further, even if we were to assume, *arguendo*, that



a proper prima facie obviousness rejection had been established – the cited references teach away from combining the references and therefore is improper.

Accordingly, Claim 2 is patentably distinct and non-obvious over the cited references for at least the reasons set forth above. Therefore, reversal of the rejection of Claim 2 is earnestly requested.

**E. Whether Claims 6, 14, and 15 are Unpatentable Under 35 U.S.C. §103(a) by EP 0 883 299 A2 to Nakagawa et al. in view of U.S. Patent Publication No. 2004/0034864 to Barrett et al. and well-known prior art**

“To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art” (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). “If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious” (MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)).

The Examiner rejected Claims 6, 14, and 15 as being unpatentable over by EP 0 883 299 A2 to Nakagawa et al. (hereinafter “Nakagawa” in short) in view of U.S. Patent Publication No. 2004/0034864 to Barrett et al. (hereinafter “Barrett” in short) in view of well-known prior art. The Examiner contends that the cited combination shows all the limitations recited in Claims 6, 14, and 15.

Nakagawa is directed to an “Apparatus and method for coding and decoding video images” (Nakagawa, Title). In further detail, Nakagawa discloses in the abstract, the following:

An apparatus and method for coding and decoding digital video images, capable of maintaining the quality of static regions, such as background images, in decoded pictures even when the resolution of pictures has been changed from high to low. The apparatus is equipped with two storage units, low-resolution and high-resolution picture storage units (4,3), to hold reference pictures in two different picture formats. When processing coded blocks (or blocks having at least one non-zero transform coefficient), a high-resolution picture updating unit (13) converts corresponding blocks of a low-resolution reference picture retrieved from the low-resolution picture storage unit (4) to obtain high-resolution block images. It then updates a high resolution picture stored in the high-resolution picture storage unit (3) with the obtained high-resolution block images. This updating operation is not applied on non-coded blocks. As a result, only active regions corresponding to the coded blocks are updated within the picture stored in the high-resolution picture storage unit (3), while the remaining part, which may possibly be static background images, is preserved without losing their high visual quality.

Barrett is directed to "seamless digital channel changing" (Barrett, Title). In further detail, Barrett discloses in the abstract, the following:

Seamless channel changing in a digital-television-based entertainment network can be implemented, for example, by providing an intra frame to a client device upon a change to a new channel even when the broadcast video data is previously compressed on a macroblock basis. In an exemplary implementation, a method includes: receiving a stream of broadcast video data that is encoded on a macroblock basis; continuously decoding the stream of broadcast video data into successive decoded images; and transmitting, responsive to a channel change message received from a client device, an intra frame that has been encoded from

a decoded image of the successive decoded images. Other exemplary implementations are described herein.

It will be shown that the limitations of Claims 6, 14, and 15 reproduced herein are not taught or suggested by the cited references (alone or in combination), and that such Claims should be allowed including those dependent there from.

**E1. Claims 6, 14, and 15**

Initially, it is respectfully noted that Claim 6 directly depends from independent Claim 1, and Claim 15 directly depends from independent Claim 14. Thus, Claim 6 includes all the limitations of Claim 1, and Claim 15 includes all the limitations of Claim 14.

It is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claim 6 (with the following applicable to Claim 6 by virtue of its respective dependency from Claim 1):

1. A video encoder for receiving input pictures and providing compressed stream data, the encoder comprising:
  - a normal encoding portion for receiving input pictures and providing normal stream data;
  - a lower-quality encoding portion for receiving input pictures and providing channel change stream data; and
  - a multiplexor in signal communication with each of the normal and lower-quality portions for receiving and combining the normal and channel change data streams.

Moreover, it is respectfully asserted that that none of the cited references, either taken singly or in combination, teach or suggest the following recited in Claims 14-15 (with the following applicable to Claim 15 by virtue of their respective dependency from Claim 14):

14. A non-transitory digital videodisc encoded with signal data comprising a plurality of block transform coefficients for a combined stream formed from each of normal stream and channel change stream data, the coefficients indicative of an original signal data sequence, the normal stream data of the digital videodisc having coefficients embodying a normal quality data sequence, and the channel change stream of the digital videodisc having coefficients embodying a reduced-quality data sequence, the reduced-quality data sequence comprising at least one additional intra-coded picture.

Against the preceding reproduced limitations of Claims 6, 14, and 15 relating to a multiplexer (Claim 1) or combined (Claim 14) with respect to the normal stream and the channel change stream, the Examiner has cited the following portions of Nakagawa with the following reasoning: “column 8, lines 3-11 of Nakagawa – normal and lower-quality data streams combined according to resolution selection controller, and stored frames are converted accordingly.”

However, the Examiner then admits that “Nakagawa does not disclose expressly that the lower-quality encoding portion provides channel change stream data; and that the multiplexer combines the normal and channel change data streams”.

Referring back to column 8, lines 3-11 of Nakagawa, the same discloses the following in its entirety:

Next, suppose that the resolution selection controller 1 has changed the picture resolution mode to the low resolution mode to encode the next frame. Upon transition in the picture resolution from high to low, the low resolution picture updating unit 14 entirely converts the picture stored in the high-resolution picture storage unit 3 to the low resolution, and feeds the resultant low-resolution picture to the low-resolution picture storage unit 4.

Initially, we note that we respectfully disagree with the Examiner's reading of Nakagawa. For example, Nakagawa does not combine a high resolution stream and a low resolution stream, let alone combining a normal stream and a channel change stream as essentially recited in each of Claims 6, 14, and 15, let alone doing the same using a multiplexer as recited in Claim 6. For example, the entire disclosure of Nakagawa does not even disclose a "multiplexer" as recited in Claim 6. Moreover, we note per at least the preambles of each of Claims 6, 14, and 15, the resultant combined data stream is provided (output) from the corresponding video encoder of Claim 6, and the digital videodisc of Claims 14-15.

Moreover, we note that the channel change stream data comprises lower-quality encoded data than the normal stream data, as essentially recited in each of Claims 6, 14, and 15. Thus, while a combination stream is essentially formed in each of Claims 6, 14, and 15 by virtue of the combining/multiplexing of the normal stream and the channel change stream, Nakagawa is solely concerned with outputting ONLY ONE OF a high resolution picture OR a low resolution picture, and hence never forms a combination stream in contrast to the multiplexer/means for combining or multiplexing/combining essentially recited in Claims 6, 14, and 15.

For example, col. 2, line 35 to col. 3, line 1 of Nakagawa disclose the following:

a video coding apparatus for *performing* a predictive *coding of digital video input signals* in conjunction with an internal picture format conversion *according to a picture resolution mode that is determined by a resolution selection controller*.... Here, the picture resolution mode can be *EITHER a high resolution mode OR a low resolution mode*. This proposed video coding apparatus comprises ... a selective reading-out unit to selectively read out the high-resolution picture *from* the high-resolution picture storage unit *when* the high resolution mode has been selected by the resolution selection controller, *OR* the low-resolution picture *from* the low-resolution picture storage unit *when* the low resolution mode has been selected by the resolution selection controller.

Regarding the preceding reproduced portion of Nakagawa, we note the selective reading-out unit that selectively reads out from ONE of the high-resolution picture storage unit OR the low-resolution picture storage unit. We note that the selective reading-out unit shown in FIG. 1 of Nakagawa involves a switch having two inputs and one output, where only one of the inputs can be selected at any given time. We note that one input is connected to the high-resolution picture storage unit, and the other input is connected to the low-resolution picture storage unit. Given such a structure of the selective reading-out unit 14, Nakagawa cannot output both a high-resolution picture and a low-resolution picture at the same time, let alone combine the same for providing a combined output as essentially recited in each of Claims 6, 14, and 15.

Moreover, column 4, lines 43-45 of Nakagawa disclose that "the picture resolution mode can be *EITHER* a high resolution mode *OR* a low resolution mode" (emphasis added).

Additionally, while the Examiner has refuted our definitions of a multiplexer and/or multiplexing, we note the following from the well-known source “The Electrical Engineering Handbook, Second Edition, Ed. in Chief R. Dorf, CRC Press and IEEE Press, 1997, p. 1747 (emphasis added): “Particularly in missile telemetry, it is important that multiple measurements be transmitted over a single carrier to save power and minimize electronic equipment and antennas. Such simultaneous transmission of signals over a common path, called multiplexing, is sometimes used in industrial telemetry”. Such simultaneous transmission (or simultaneous output) is inherent in a combined signal such as that produced and/or otherwise implicated by the explicit limitations recited in the aforementioned claims. To that end, we note the explicit use of the word “combining” in the aforementioned claims. Nonetheless, all of the preceding applies to a “multiplexer” and “multiplexing” as also recited in the aforementioned claims, and as would be recognized by one of ordinary skill in the art.

Thus, the cited portion of Nakagawa does not teach or suggest combining two streams, but rather converting a picture stored in a high-resolution picture store to a low resolution and providing that low-resolution picture to a low-resolution picture store. Moreover, even if assuming arguendo that any combining where in fact disclosed in Nakagawa, such combining clearly is not performed to provide (output) a combined stream as the apparatus and method of Nakagawa only outputs either a high-resolution picture or a low-resolution picture.

Thus, by limiting its output to either a high-resolution picture or a low-resolution picture, while each of Claims 6, 14, and 15 involves multiplexing or otherwise combining the normal stream and the channel change stream, the invention of Nakagawa can be considered to actually

teach away from the explicit limitations recited in Claims 6, 14, and 15. However, as set forth in MPEP 2145.X.D.1, “It is improper to combine references where the references teach away from their combination.” *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983) (The claimed catalyst which contained both iron and an alkali metal was not suggested by the combination of a reference which taught the interchangeability of antimony and alkali metal with the same beneficial result, combined with a reference expressly excluding antimony from, and adding iron to, a catalyst.).

Hence, Nakagawa does not teach or suggest all the above reproduced limitations of Claims 6, 14, and 15.

We note that Barrett does not cure the deficiencies of Nakagawa and, similar to Nakagawa actually teaches away from the explicit limitations recited in Claims 6, 14, and 15. For example, the Examiner has even admitted at the onset that “Barrett discloses encoding normal stream data and separately encoding channel change stream data (fig. 5 and para. 6 of Barrett)”. Thus, similar to Nakagawa, Barrett does not disclose multiplexing and/or otherwise combining a normal stream with a channel change stream as recited in Claims 6, 14, and 15.

Moreover, the cited well-known prior art also does not cure the deficiencies of Nakagawa and/or Barrett, and is silent regarding the same.

Thus, none of the cited references, either taken singly or in any combination, teach or suggest all of the above reproduced limitations of Claims 6, 14, and 15; and therefore the Examiner has not even established a prima facie obviousness rejection. Further, even if we were to assume, arguendo, that a proper prima facie obviousness rejection had been established – the cited references teach away from combining the references and therefore is improper.



Accordingly, Claims 6, 14, and 15 are patentably distinct and non-obvious over the cited references for at least the reasons set forth above. Therefore, reversal of the rejection of Claims 6, 14, and 15 is earnestly requested.

**F. Conclusion**

At least the above-identified limitations of the pending claims are not described, disclosed, nor suggested by the contents of the Nakagawa, Barrett, and Nozawa references and that of the mentioned well-known prior art, considered alone or in combination. Further it is believed that all claims represent proper statutory subject matter that is in compliance with the requirements of 35 U.S.C. 101.

Accordingly, it is respectfully requested that the Board reverse the rejections of independent Claims 1-15 under 35 U.S.C. §101, and 35 U.S.C. §103(a).

Please charge the amount of \$540.00, covering fee associated with the filing of the Appeal Brief, to **Thomson Licensing Inc., Deposit Account No. 07-0832**. In the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge **Deposit Account No. 07-0832** as required to correct the error.

Respectfully submitted,

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January 7, 2011

**8. CLAIMS APPENDIX**

1. (previously presented) A video encoder for receiving input pictures and providing compressed stream data, the encoder comprising:

a normal encoding portion for receiving input pictures and providing normal stream data;  
a lower-quality encoding portion for receiving input pictures and providing channel change stream data; and

a multiplexor in signal communication with each of the normal and lower-quality portions for receiving and combining the normal and channel change data streams

2. (previously presented) A video encoder as defined in Claim 1, further comprising a low-pass filter in signal communication with the lower-quality encoding portion for providing low-pass filtered input pictures to the lower-quality encoding portion.

3. (previously presented) A video encoder as defined in Claim 1, further comprising a downsampling unit in signal communication with the lower-quality encoding portion for providing downsampled input pictures to the lower-quality encoding portion.

4. (original) A video encoder as defined in Claim 1, further comprising means for creating a channel change stream with more frequent intra-coded pictures in the channel change stream than in a corresponding normal stream.

5. (original) A video encoder as defined in Claim 4, further comprising means for downsampling to create lower resolution channel change stream pictures.

6. (original) A video encoder as defined in Claim 1, further comprising means for encoding redundant picture syntax in compliance with the JVT standard.

7. (original) A video encoder as defined in Claim 1, further comprising means for encoding channel change pictures into user data of corresponding normal stream pictures.

8. (original) A video encoder as defined in Claim 1, further comprising means for signaling to a decoder whether to use normal stream or channel change stream pictures for subsequent channel change stream intra-coded pictures.

9. (original) A video encoder as defined in Claim 1, further comprising a picture selector in signal communication with the lower-quality encoding portion for selecting a subset of the input pictures to code in the channel change stream.

10. (previously presented) A video encoding method for receiving input pictures and providing compressed stream data, the method comprising:

receiving input pictures;

encoding normal stream data from the received input pictures;

encoding channel change stream data from the received input pictures wherein the channel change stream data comprises lower-quality encoded data than the normal stream data;  
and

multiplexing the normal and channel change data streams into a combined output stream.

11. (original) A video encoding method as defined in Claim 10, further comprising at least one of:

creating a channel change stream with more frequent intra-coded pictures in the channel change stream than in a corresponding normal stream;

downsampling to create lower resolution channel change stream pictures;

encoding redundant picture syntax in compliance with the JVT standard;

encoding channel change pictures into user data of corresponding normal stream pictures;  
and

signaling to a decoder whether to use normal stream or channel change stream pictures for subsequent channel change stream intra-coded pictures.

12. (original) A video encoding method as defined in Claim 10, further comprising selecting a subset of the input pictures to code in the channel change stream.

13. (original) A video encoding apparatus for receiving input pictures and providing compressed stream data, the apparatus comprising:

means for receiving input pictures;

means for encoding normal stream data from the received input pictures;

means for encoding channel change stream data from the received input pictures, wherein the channel change stream data comprises lower-quality encoded data than the normal stream data; and

means for combining the normal and channel change data streams into a combined output stream.

14. (previously presented) A non-transitory digital videodisc encoded with signal data comprising a plurality of block transform coefficients for a combined stream formed from each of normal stream and channel change stream data, the coefficients indicative of an original signal data sequence, the normal stream data of the digital videodisc having coefficients embodying a normal quality data sequence, and the channel change stream of the digital videodisc having coefficients embodying a reduced-quality data sequence, the reduced-quality data sequence comprising at least one additional intra-coded picture.

15. (previously presented) A non-transitory digital videodisc as defined in Claim 14 wherein the reduced-quality data sequence is encoded in the picture user data.

CUSTOMER NO.: 24498  
Serial No.: 10/560,477

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9. RELATED EVIDENCE APPENDIX

None.

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PATENT  
PU030170

**10. RELATED PROCEEDINGS APPENDIX**

None.

## Subject Matter Eligibility of Computer Readable Media

The United States Patent and Trademark Office (USPTO) is obliged to give claims their broadest reasonable interpretation consistent with the specification during proceedings before the USPTO. *See In re Zletz*, 893 F.2d 319 (Fed. Cir. 1989) (during patent examination the pending claims must be interpreted as broadly as their terms reasonably allow). The broadest reasonable interpretation of a claim drawn to a computer readable medium (also called machine readable medium and other such variations) typically covers forms of non-transitory tangible media and transitory propagating signals *per se* in view of the ordinary and customary meaning of computer readable media, particularly when the specification is silent. *See* MPEP 2111.01. When the broadest reasonable interpretation of a claim covers a signal *per se*, the claim must be rejected under 35 U.S.C. § 101 as covering non-statutory subject matter. *See In re Nuijten*, 500 F.3d 1346, 1356-57 (Fed. Cir. 2007) (transitory embodiments are not directed to statutory subject matter) and *Interim Examination Instructions for Evaluating Subject Matter Eligibility Under 35 U.S.C. § 101*, Aug. 24, 2009, p. 2.

The USPTO recognizes that applicants may have claims directed to computer readable media that cover signals *per se*, which the USPTO must reject under 35 U.S.C. § 101 as covering both non-statutory subject matter and statutory subject matter. In an effort to assist the patent community in overcoming a rejection or potential rejection under 35 U.S.C. § 101 in this situation, the USPTO suggests the following approach. A claim drawn to such a computer readable medium that covers both transitory and non-transitory embodiments may be amended to narrow the claim to cover only statutory embodiments to avoid a rejection under 35 U.S.C. § 101 by adding the limitation "non-transitory" to the claim. *Cf. Animals – Patentability*, 1077 Off. Gaz. Pat. Office 24 (April 21, 1987) (suggesting that applicants add the limitation "non-human" to a claim covering a multicellular organism to avoid a rejection under 35 U.S.C. § 101). Such an amendment would typically not raise the issue of new matter, even when the specification is silent because the broadest reasonable interpretation relies on the ordinary and customary meaning that includes signals *per se*. The limited situations in which such an amendment could raise issues of new matter occur, for example, when the specification does not support a non-transitory embodiment because a signal *per se* is the only viable embodiment such that the amended claim is impermissibly broadened beyond the supporting disclosure. *See, e.g., Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473 (Fed. Cir. 1998).

Date: 1/24/10

  
David J. Kappos

Under Secretary of Commerce for Intellectual Property and  
Director of the United States Patent and Trademark Office